

WHAT IS CLAIMED IS:

1. A base station in a mobile communication network, comprising:

first and second polarized antennas respectively having two branches
and being formed in a same sector;

5 a first delay element for time-delaying a signal received at the second
branch from among signals received at the first and second branches of the first
polarized antenna so as to distinguish an offset of the signal from an offset of a
signal received at the first branch;

10 a second delay element for time-delaying a signal received at the fourth
branch from among signals received at the third and fourth branches of the
second polarized antenna so as to distinguish an offset of the signal from an
offset of a signal received at the third branch;

 a first adder for adding the signal received at the first branch of the first
polarized antenna and a signal time-delayed by the first delay element;

15 a second adder for adding the signal received at the third branch of the
second polarized antenna and a signal time-delayed by the second delay
element; and

20 a modem processor for receiving the signals added by the first and
second adders and separating an offset distinguishable signal from the
respective signals.

2. The base station of claim 1, further comprising:

first and second RF (radio frequency) processors respectively connected
to the first and second adders, for converting the respective signals from the first
and second adders into IF (intermediate frequency) signals; and

first and second IF processors respectively connected between the first and second RF processors and the modem processor, for converting the respective signals from the first and second RF processors into baseband signals, and transmitting the baseband signals to the modem processor.

5 3. The base station of claim 1, further comprising:

first through fourth RF processors respectively connected to the first through fourth branches, for converting the respective signals from the first through fourth branches into IF signals, and respectively transmitting the IF signals to the first adder, the first delay element, the second adder, and the
10 second delay element; and

first and second IF processors connected between the first and second adders and the modem processor, for converting the signals from the first and second adders into baseband signals, and transmitting the baseband signals to the modem processor.

15 4. The base station of claim 1, further comprising:

first through fourth RF processors respectively connected to the first through fourth branches, for converting the respective signals from the first through fourth branches into IF signals; and

first through fourth IF processors respectively connected between the
20 first through fourth RF processors, the first adder, the first delay element, the second adder, and the second delay element, for converting the signals from the first through fourth RF processors into baseband signals.

5. A method for receiving and processing signals at a base station in a mobile communication network, comprising:

(a) receiving signals through first and second polarized antennas respective having first and second branches and third and fourth branches formed in the same sector;

5 (b) time-delaying the signals received at the second branch of the first polarized antenna and the fourth branch of the second polarized antenna so as to distinguish offsets of the signals from offsets of signals received at the first and third branches;

10 (c) adding the signal received at the first branch and the signal received at the second branch and time-delayed into a first add signal, and adding the signal received at the third branch and the signal received at the fourth branch and time-delayed into a second add signal; and

(d) separating an offset distinguishable signal from the first and second add signals.

15 6. The method of claim 5, wherein (c) further comprises respectively converting the first and second add signals into baseband signals.

7. The method of claim 5, wherein (a) further comprises converting the signals received at the first through fourth branches into IF signals, and

(c) further comprises respectively converting the first and second add signals into baseband signals.

20 8. The method of claim 5, wherein (a) further comprises converting the signals received at the first through fourth branches into baseband signals.

9. A base station in a mobile communication network, comprising:

a polarized antenna having first and second branches;

a delay element for time-delaying a signal received at the second branch

of the polarized antenna so as to distinguish an offset of the signal from an offset of a signal received at the first branch;

an adder for adding the signal received at the first branch and the signal received at the second branch and time-delayed by the delay element; and

5 a modem processor for considering an offset distinguishable signal from the added signals as a different multipath signal, and separating the same.